GECA14A/DECA14A — DIGITAL LOGIC FUNDAMENTALS

Time : Three hours   Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. Find the Hexadecimal equivalent of Decimal number 46687.

2. What is 2's Complement?

3. Define the term – Decoders.

4. Distinguish between Half-adder and Full-adder.

5. What is Flip-flop?

6. Define the term – Counters.

7. What is Scratch pad memory?

8. What is Microprogramming?

9. Define the term – Instruction set.

10. What is meant by Microprogram Control?

SECTION B — (5 × 5 = 25 marks)

Answer ALL the questions.

11. (a) Using 10's Complement, explain the method to subtract $72532 - 3250$.

Or

(b) Write short notes on different categories of Binary codes.

12. (a) Implement NOT, AND and OR Gates by using NAND Gates.

Or

(b) Describe the functions of Binary Parallel Adder.

13. (a) Discuss on Triggering of Flip-flops.

Or

(b) Explain the working of Synchronous Counters.

14. (a) Describe about Status registers.

Or

(b) Discuss on the procedure in Design of Shifters.

15. (a) Explain about Timing and Control, and Execution of Instructions.

Or

(b) Describe the functioning of Hard-wired control.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Simplify the Boolean function $F(w, x, y, z) = \sum (0, 1, 2, 4, 5, 6, 8, 9, 12, 13, 14)$ using K- Map.

17. Explain the working of Multiplexers in detail.

18. Describe the organization and functioning of Shift registers.

19. Discuss on the Design procedure of ALU.

20. Explain the Design of Accumulator.

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